

OZAUKEE HARBOR

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING

A report in reference to Ozaukee harbor, in Wisconsin.

AUGUST 21, 1850.

Referred to the Committee on Commerce.

WAR DEPARTMENT,
Washington, August 21, 1850.

SIR: In compliance with a resolution of the House of Representatives of the 15th instant, I have the honor to transmit herewith "a copy of the report, survey, plans, and estimates of the topographical engineers for the improvement of the harbor of Ozaukee, in the State of Wisconsin."

Very respectfully, your obedient servant,

C. M. CONRAD,
Secretary of War.

Hon. HOWELL COBB,
Speaker of the House of Representatives.

BUREAU OF TOPOGRAPHICAL ENGINEERS,
Washington, August 19, 1850.

SIR: In obedience to a resolution of the House of Representatives of the 15th instant, I have the honor to submit the plan, report, and estimate in relation to the harbor of Ozaukee, State of Wisconsin.

It will be perceived that the plan of the engineer who made the survey is not that of parallel piers, but he has made these piers to diverge from each other as they approach the shore. I am not prepared to approve this plan; but think it will be better to give the southern pier a direction similar to the lines *a b*.

The pier-heads, as indicated in the drawing, are not approved, experience being rather against such a form for structures of this kind.

It is also more than probable that, in the course of construction, the piers will not require to be extended into the lake as far as indicated in the drawing.

It is also probable that the angle and extent in that direction given to the northern pier may be dispensed with, the object of this angle and its

extension being accomplished by an additional length, without change of direction, in the northern pier.

These modifications will tend to diminish the cost of the work.

But a full estimate for the whole work is with great propriety given in the report, that a just opinion of its maximum cost may be formed. For the ensuing season, however, a part of that estimate only—say \$20,000—will be required.

Respectfully, sir, your obedient servant,

J. J. ABERT,

Colonel Corps Topographical Engineers.

Hon. C. M. CONRAD,
Secretary of War.

MICHIGAN CITY, INDIANA, *August 6, 1850.*

COLONEL: In compliance with your instructions I proceeded with my party to Ozaukee, (or Port Washington,) at the mouth of Sauk river, in Washington county, State of Wisconsin, and made a survey of it and adjacent shore with a view of examining the practicability of improving the harbor at this point, and have now the honor to submit the result of this labor for your consideration.

Ozaukee, or Port Washington, as I before stated, is situated at the mouth of Sauk river. This stream is not large; the width of its mouth at the time of making the survey was fifty feet, and the maximum depth of water four feet. I would observe that, at the time of making this survey, an unprecedented long and severe drought had prevailed, affecting all the water-courses in this section of the country, which, without doubt, had greatly reduced the quantity of water flowing out of this stream. To make the mouth of this river available for a harbor, it will be necessary to deepen and widen it: this mouth, as is common with that of all streams emptying into these lakes, is obstructed by accretions of shingle, but not in large quantities as in sandy formations, as the adjacent shore is formed of high bluffs of coarse limestone gravel resting on a substructure, hard clay, and a beach of coarse gravel producing but a limited quantity of floating sand or other matter for the formation of shingle. The shore is bold, and, consequently, the length of piers will be less than in sandy formations. The survey was extended, and soundings made to include three miles of the shore of Lake Michigan, on each side of Ozaukee, by which a bold shore was found to exist, and a similar formation of bluffs as above described. From the existing elements of Ozaukee, necessary for the formation of a harbor, the following plan is suggested as the most promising of success, viz: To extend from the shore at three hundred feet apart, to include the mouth of the river, two solid piers, inclining to each other so as to contract the distance between them at the mouth of the harbor or entrance to two hundred and fifty feet. The northern pier to exceed the southern in length; this excess to have an increased inclination to the south so as to defile or cover the mouth of the harbor and space between the piers. The general direction of the lines of the contiguous shore of Lake Michigan, at Ozaukee, are convergent to it—the one from the south; the other from east of north; forming thereby a shore of crescent form or a re-entering angle, at whose vertex Ozaukee is situated. The heaviest blows, affecting this shore, are from the northeast and southeast; the drift of the lake

is from the north, which is light, as the bottom of the lake and shore is composed of rough gravel, but little sand prevailing, which composes the drift. The direction proposed to be given the piers to meet the above contingency is as follows, viz: The north pier to have two lines of direction—the first one thousand and fifty (1,050) feet, to be south 66° east; the second or remaining portion, five hundred (500) feet in length, to be south $23^{\circ} 30'$ east; the south pier to have but one direction, nine hundred and fifty (950) feet in length—its direction south 72° east. The reasons for the proposed excess in length to be given to the north pier over the south are, first, to assimilate with the general direction of the drift, and prevent accretions of shingle; and secondly, to defile the entrance and interior space between the piers from the northeast and southeast winds, which are the most boisterous and prevalent on this shore, and thereby a safe and quiet interior harbor may be anticipated. In addition to the piers, it is proposed to widen and deepen the mouth of the river after the piers are completed, if it should then be found necessary for additional room, or the safety of the harbor should require it. I have appended separate estimates, in detail, of the cost of both portions of the work, viz: for the construction of the two piers, \$66,946 88; and also for the expense contingent upon the widening and deepening of the river mouth, viz: \$25,231 26. The aggregate estimate of the cost of both improvements is \$92,218 14, which is less than for similar works in sandy formations. The shore in this case being bold, less length of piers is required to obtain the same depth of water. Ozaukee, or Port Washington, is situated at an important point, and one at which a harbor of refuge is greatly required, it being twenty-five miles from, and equally distant from, Milwaukee and Sheboygan, and no point of the shore for this distance of fifty miles presents equal advantages for the formation of a harbor, as the banks of Lake Michigan for this distance, with the exception of this point, are generally composed of high precipitous bluffs, without any stream flowing into Lake Michigan of equal magnitude to Sauk river. Ozaukee, or Port Washington, is the capital of Washington county; contains a population (as estimated) of about 25,000 inhabitants, and its soil is unusually prolific, and considered one of the finest agricultural counties in the State of Wisconsin. Ozaukee is the nearest outlet for the agricultural products of this and interior adjacent counties, which are settling with unprecedented rapidity, which will greatly increase the exports of the now large surplus of agricultural products to be shipped from this point. The population of the adjacent counties above alluded to, if added to Washington county, would make, as estimated, near 100,000 inhabitants, dependant on a harbor at this point for the outlet of the produce of their labor, and the reception of the merchandise and other supplies from Atlantic States.

I hereby append an estimate in detail of the cost of this proposed improvement, as also a diagram map exhibiting the project of the work; also, accompanying the same, a map exhibiting the shore and soundings at this place and six miles of the adjacent shore of Lake Michigan. All of which is most respectfully submitted for your consideration, by your obedient servant,

JOHN R. BOWES,
United States Agent.

Col. J. J. ABERT,
Chief of the Bureau of Topographical Engineers

Estimate of the cost of constructing two solid piers of 24 feet base—one 1,550 feet, the other 950 feet, in length; aggregate length of the two, 2,500 feet; also, for widening and deepening the mouth of Sauk river, at Ozaukee, or Port Washington, Wisconsin.

For the two piers, viz:

5,432 cords of stone, at \$6 per cord	-	-	-	\$32,592 00
53,350 feet, lineal measure, logs for cribs, at 7 cts. per foot	-	-	-	3,734 50
50,868 feet, lineal measure, square timber for levelling, at 10 cents per foot	-	-	-	5,086 80
500 piles, averaging 30 feet each, 15,000 feet, at 10 cts. per foot	-	-	-	1,500 00
Driving 500 piles, at \$1 50 each	-	-	-	750 00
4,667 cross-ties, at 50 cents each	-	-	-	2,333 50
220,000, board measure, 4-inch plank for deck, at \$8 per m.	-	-	-	1,760 00
500 lbs. spikes, at 8 cents per lb.	-	-	-	400 00
4,000 lbs. bolt-iron, at 6 cents per lb.	-	-	-	240 00
				<hr/> 48,396 80
Add for labor and machinery	-	-	-	12,464 00
				<hr/> 60,860 80
Add ten per cent. for contingencies	-	-	-	6,086 08
				<hr/> 66,946 88
				<hr/> <hr/>

Estimate of the cost of widening and deepening the mouth of Sauk river, viz:

Excavating above water 12,929 cubic yards of 25 cubic feet, at 12 cents	-	-	-	\$1,551 48
Excavating below water 55,788 cubic yards of 25 cubic feet, at 25 cents	-	-	-	13,947 00
Sheet piling, 1,167 feet of river bank, at \$8 34 per foot	-	-	-	9,732 78
				<hr/> 25,231 26
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Aggregate cost of whole improvement, viz:

Construction of piers	-	-	-	\$66,946 88
Widening and deepening river	-	-	-	25,231 26
				<hr/> 92,188 14
				<hr/> <hr/>

Respectfully submitted by

JOHN R. BOWLES,
United States Agent.

Colonel J. J. ABERT,
Chief of the Bureau of Topographical Engineers.